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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

TRAN, MY CHAU T

ART UNIT PAPER NUMBER

1639

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/421,422

Applicant(s)

HARBURY ET AL.

Examiner

MY-CHAU T. TRAN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-10,15 and 16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-10,15 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Application and Claims Status

1. Applicant's amendment and response filed 06/01/2006 are acknowledged and entered.
2. Claims 1, 3-10, 15, and 16 were pending. Applicants have amended claims 1, 3-5, 10, and 16. No claims were added and/or cancelled. Therefore, claims 1, 3-10, 15, and 16 are currently pending and are under consideration in this Office Action.

Status of Claim(s) Objection(s) and /or Rejection(s)

3. All previous objection and rejections are withdrawn in view of applicants' amendments to claims 1, 3-5, 10, and 16, and applicants' arguments filed 06/01/2006. However, upon further consideration, a new ground(s) of rejection is made in view of Liu (*PloS Biology*, 7/2004, 2(7), pgs. 905-906) and Halpin et al. (*PloS Biology*, 7/2004, 2(7), pgs. 1031-1038).

New Rejection(s)

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1, 3-10, 15, and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains,

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or with which it is most nearly connected, to make and/or use the invention. This is an enablement rejection.

There are many factors to consider when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any experimentation is “undue”. These factors include, but are not limited to: 1) The breadth of the claims; 2) The nature of the invention; 3) The state of the prior art; 4) The level of one of ordinary skill; 5) The level of predictability in the art; 6) The amount of direction provided by the inventor; 7) The presence or absence of working examples; and 8) The quantity of experimentation necessary needed to make or use the invention based on the disclosure. (See *In re Wands* USPQ 2d 1400 (CAFC 1988)).

(1-2) The breadth of the claims and the nature of the invention

The claims are drawn to a broad genus. Here, the instant invention claimed a method of nucleic acid tags-directed synthesis of a plurality of compounds wherein the product produced by this method is a broad genus of compounds, which represents enormous scope because the claims do not place any limitations on the number of atoms types of atoms or the way in which said atoms can be connected together to form such a compound, i.e. the compound would include any biological compounds, organic compounds, and inorganic compounds. Thus, virtually an infinite number of possibilities would be included in Applicants’ claimed scope encompassing virtually every known class and subclass of compounds, i.e. the compound would include any biological compounds, organic compounds, and inorganic compounds. Consequently, the instantly claimed method of nucleic acid tags-directed synthesis of a plurality

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of compounds wherein the product produced by this method is a broad genus of compounds, which represents enormous scope.

(3 and 5) The state of the prior art and the level of predictability in the art:

Although the present invention relates to the methodology of split-and-pool combinatorial synthesis that uses DNA display approach to chemical translation, this methodology is known at the time of filing but the instantly claimed method of nucleic acid tags-directed synthesis of a plurality of compounds is not known at the time of filing. That is the instantly claimed method uses DNA-template to direct the synthesis wherein DNA hybridization and the chemical synthesis steps occurs simultaneously, which is distinct from the methodology of split-and-pool combinatorial synthesis that uses DNA display approach to chemical translation (see e.g. Liu: pg. 906, 1st col., lines 17-31). As a result, the art is unpredictable because the instantly claimed method is not sufficiently routine or predictable at the time of filing, to permit one of skill in the art to devise strategies for making a broad genus of compounds wherein the compound would includes any biological compounds, organic compounds, and inorganic compounds. For example, both the references of Liu and Halpin et al. disclose that the method of DNA-template directed synthesis is limited to the type of reaction condition use for the chemical synthesis steps because reaction conditions such as high temperatures or high pH would not be compatible with DNA hybridization (see e.g. Liu: pg. 906, 1st col., lines 22-31; Halpin: pg. 1035, right col., lines 52-59). Accordingly, the type of compounds produced by the method of DNA-template directed synthesis would be limited. Therefore, the art for the method of DNA-template directed synthesis would be difficult to optimize and/or correlates, especially.

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when the type of reaction condition use for the chemical synthesis steps would be limited to condition that would be compatible with DNA hybridization.

(4) The level of one of ordinary skill in the art:

The level of skill would be high, most likely at the Ph.D. level.

(6-7) The amount of direction provided by the inventor and the existence of working examples.

The instant specification disclosure is directed to the method of DNA-template directed synthesis wherein the DNA hybridization and the chemical synthesis steps are separated. That is the pool of different DNA tags are divided into separate subsets on the basis of the specific hybridization sequence of each DNA tags, i.e. the DNA-templates are split into separate subsets of DNA-template by DNA hybridization (see specification pg. 15, lines 1-8). Each subset of DNA tags are then non-covalently bound to a solid support such that the chemical synthesis step can be performed (see specification pg. 16, lines 1-18). These steps are repeated produce a peptide-DNA conjugates (see specification pg. 16, lines 1-18; fig. 1). In addition, applicant did not provide any working example.

(8) The quantity of experimentation needed to make or use the invention based on the content of the disclosure:

As a result of the broad and unpredictable nature of the invention and the lack of specific guidance from the specification, the Examiner contends that the quantity of experimentation needed to make and or use the invention would be great. Note that there must be sufficient

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disclosure, either through illustrative examples or terminology, to teach those of ordinary skill how to make and use the invention as broadly as it is claimed. *In re Vaeck*, 947 F.2d 488, 496 & n.23, 20 USPQ2d 1438, 1445 * n.23 (Fed. Cir. 19991). In this case, Applicants have not provided any working examples that would teach this enormous genus that falls within a highly unpredictable art area. Therefore, it is deemed that further research of an unpredictable nature would be necessary to make or use the invention as claimed. Thus, due to the inadequacies of the instant disclosure one of ordinary skill would not have a reasonable expectation of success and the practice of the full scope of the invention would require undue experimentation.

Therefore based on the evidences as a whole regarding each of the above factors (e.g. factors 1-8), the specification, at the time the application was filed, does not satisfy the enablement requirement for the instant claimed method of nucleic acid tag-directed synthesis of any compounds.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1, 3-10, 15, and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. The limitation of “*reacting the chemical reaction sites of the nucleic acid tags in each subsets formed in (a) with a selected one or a plurality of first reagents*” of claim 1 step (b) is vague because a reaction “sites” does not participate in a chemical reaction but rather a chemical compound such as reagent, chemical functional group, protein, nucleic

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acid, or catalyst would participate in a chemical reaction. Accordingly, the limitation of *“reacting the chemical reaction sites of the nucleic acid tags in each subsets formed in (a) with a selected one of a plurality of first reagents”* of claim 1 step (b) is vague and indefinite, and claim 1 and all its dependent claims are rejected under 35 U.S.C. 112, second paragraph.

b. The limitation of *“reacting the reacted nucleic acid tag in each of the subsets formed in (d) with a selected one of a plurality of second reagents”* of claim 1 step (e) is vague because it is unclear as to which part of the “reacted nucleic acid tag”, i.e. the first hybridization sequence or the reagent specific compound intermediate, is participating in the reaction with the “second reagent”. Consequently, the limitation of *“reacting the reacted nucleic acid tag in each of the subsets formed in (d) with a selected one of a plurality of second reagents”* of claim 1 step (e) is vague and indefinite, and claim 1 and all its dependent claims are rejected under 35 U.S.C. 112, second paragraph.

c. Claim 16 recites the limitation “tags” in line 2. There is insufficient antecedent basis for this limitation in the claim 1. Claim 1 recite the limitation of “nucleic acid tag”.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to My-Chau T. Tran whose telephone number is 571-272-0810. The examiner can normally be reached on Monday: 8:00-2:30; Tuesday-Thursday: 7:30-5:00; Friday: 8:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Paras, Jr., can be reached on 571-272-4517. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mct
August 28, 2006

PETER PARAS, JR.
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